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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

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(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 30104wo/djw	FOR FURTHER ACTION See Form PCT/IPEA/416	
International application No. PCT/IB2002/003267	International filing date (day/month/year) 28-06-2002	Priority date (day/month/year) ---
International Patent Classification (IPC) or national classification and IPC H04M 15/00, . H04M 17/02		
Applicant NOKIA CORPORATION et al		

- This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.
- This report is also accompanied by ANNEXES, comprising:
 - ☒ (sent to the applicant and to the International Bureau) a total of 3 sheets, as follows:
 - ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

Date of submission of the demand 14-08-2003	Date of completion of this report 22.09-2004
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Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☐ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-10 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 11-13 _____ received by this Authority on 26-07-2004
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages 1-3 _____ as originally filed/furnished
- pages* _____ received by this Authority on _____
- pages* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to the sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	<u>1-22</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-22</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-22</u>	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1 S.Zander: "Evaluation of Diameter Protocol against IPFIX Requirements", XP 002235932, retrieved from the Internet URL: <http://www.ietf.org>, pages 1-12, September 2002
D2 US 2002065785 A1 (Y.Tsuda), 30 May 2002
D3 WO 02052833 A1 (Nokia Corp.), 4 July 2002
D4 US 6181927 B1 (J.B.Jr Welling et al), 30 January 2001
D5 EP 0452591 A2 (American Telephone and Telegraph Comp.), 23 October 1991
D6 US 5666405 A (R.P.Weber), 9 September 1997

In a view of new claims, amended at 26-07-2004, documents D1-D4 are reconsidered to represent the state of the art, together with documents D5 and D6.

Document D1 discloses an evaluation of the applicability of the Diameter protocol as an IPFIX protocol. The general Diameter architecture and its application to the communication between an IPFIX exporting process and an IPFIX collecting process are explained. The Diameter protocol is developed for the purpose of authentication, authorization and accounting. The data model of Diameter is based on Attribute Value Pairs-AVPs. Each Diameter message consists of a fixed header and a number of AVPs carrying data. Diameter can be extended by defining new AVP values, new AVPs and new applications, including definition of new command codes. (See the whole document).

Document D2 discloses a mobile communication system using mobile IP and AAA protocols, such as Diameter, for general

.../...

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

authentication and accounting. The authentication authorization accounting home (AAAH) server has a recording unit which records communication fee information that is to be charged to a mobile node device. A processor carries out requested authentication and accounting processes for the packet communication of the mobile node device, according to the fee information. (See page 2, part 0019-page 3, part 0028; page 4, part 0054-page 5, part 0077; abstract; fig.13-19).

Document D3 discloses a connection service charging for mobile communication system such as universal mobile telecommunication system (UMTS), global positioning search satellite (GPSR) system etc. involving computing connection charges for both connection support entities using respective tariffs and transmitting to charging entity, along with connection ID. Initiation of a connection between two connection support entities is detected based on which connection identification information is generated. Connection charges for both support entities are determined based on respective tariffs. Calculated charges along with identification information are transmitted to a charging entity. (See page 1, line 1-page 6, line 12; abstract; fig.1-3).

Document D4 discloses a method for selecting and transmitting a message to a user in a telecommunications system involving receiving a call from a subscriber station, where the call comprises origination information. The call origination information is compared to triggering criteria and triggers if the origination information meets the criteria. A message is selected based on one or more attributes of the subscriber station in response to triggering, and the selected message is transmitted to the subscriber station. (See column 1, line 35-63; abstract).

However, none of the cited documents discloses a method for charging for services in a communication system supporting a Diameter IP protocol comprising receiving a request to establish an IP session from a user of the system and initiating an account with an account controller of the system, wherein the step of initiating an account comprises transferring sponsorship information to a charging system, the charging system being responsible for monitoring of the account.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Box V

In view of the cited documents such a method, a communication system and a Diameter IP protocol cannot be considered obvious to a person skilled in the art.

Therefore the invention claimed in claims 1 - 22 is novel and considered to involve an inventive step.

What is claimed in claims 1 - 22 is considered to be industrially applicable.

26 -07- 2004

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CLAIMS:

1. A method for charging for services in a communication system supporting a Diameter IP protocol, comprising receiving a request to establish an IP session from a user of the system; and
5 initiating an account with an account controller of the system, wherein the step of initiating an account comprises transferring sponsorship information to a charging system, the charging system being responsible for monitoring of the account; the method further comprising establishing the IP session; and initiating
10 the monitoring of the account.
2. A method according to claim 1 wherein the sponsorship information is transferred from an application server.
3. A method according to either of claims 1 or 2 wherein the account is initiated responsive to an account request message.
- 15 4. A method according to any one of claims 1 to 3 wherein the monitoring of the account is initiated responsive to an account request message.
5. A method according to claim 1 to 4 wherein the sponsorship information is defined by at least one attribute value pair.
- 20 6. A method according to claim 5 wherein there is provided an attribute value pair defining shared charging information.
7. A method according to claim 5 or claim 6 wherein there is provided an attribute value pair defining shared percentage information.
- 25 8. A method according to any one of claims 5 to 7 wherein there is provided an attribute value pair defining shared amount information.

AMENDED SHEET

9. A method according to any one of claims 5 to 8 wherein there is provided an attribute value pair defining a sponsor identity.

10. A communication system supporting a Diameter IP protocol
5 comprising:

control function means adapted to initiate an IP session for a user of the system;

an application server for providing an application for a user of the system in an IP session;

10 an account controller for initiating an account;

a charging means for charging an IP session for a user, wherein the charging means receives sponsorship information on initiation of the account, and is responsible for monitoring of the account.

15 11. A communication system according to claim 10 wherein the control function means is a serving call state control function.

12. A communication system according to claim 10 or claim 11 wherein the charging means comprises an on-line charging
20 function and an off-line charging function.

13. A communication system according to any one of claims 10 to 12, wherein the charging is initiated on the basis of a Diameter IP communication between the call control function and the charging means.

25 14. A communication system according to any one of claims 10 to 13, wherein shared charging information is communicated to the charging means from the application function on the basis of a Diameter IP communication.

15. A communication system according to any one of claims 10 to 14, wherein the charging means monitors the call session charges responsive to a Diameter IP communication from the call control function.

5 16. A communication system according to claims 10 to 15 wherein the Diameter protocol is adapted to define at least one attribute value pair to define sponsorship information.

17. A communication system according to claim 16 wherein the attribute value pair defines shared charging information.

10 18. A communication system according to claim 16 or claim 17 wherein the attribute value pair defines shared percentage information.

15 19. A communication system according to any one of claims 16 to 18 wherein the attribute value pair defines shared amount information.

20. A communication system according to any one of claims 16 to 19 wherein the attribute value pair defines a sponsor identity.

20 21. A Diameter IP protocol adapted to define at least one attribute value pair to define sponsorship information.

22. A Diameter IP protocol according to claim 21 wherein the sponsorship information is provided to enable shared charging.